[b] If no specific information is available, this value can be assumed to represent the most common/typical deck fittings currently used.
[c] D=Tank diameter (feet).
[d] Not used on welded contact internal floating decks.

TABLE 28 TO SUBPART G OF PART 63—DECK SEAM LENGTH FACTORS [A] ($S_D$) FOR INTERNAL FLOATING ROOF TANKS

| Deck construction | Typical deck seam length factor |
|---|---|
| Continuous sheet construction [b]: | |
| 5-feet wide sheets | 0.2 [c] |
| 6-feet wide sheets | 0.17 |
| 7-feet wide sheets | 0.14 |
| Panel construction [d]: | |
| 5 × 7.5 feet rectangular | 0.33 |
| 5 × 12 feet rectangular | 0.28 |

[a] Deck seam loss applies to bolted decks only. Units for $S^D$ are feet per square feet.
[b] $S_D$=1/W, where W = sheet width (feet).
[c] If no specific information is available, these factors can be assumed to represent the most common bolted decks currently in use.
[d] $S_D$=(L+W)/LW, where W = panel width (feet), and L = panel length (feet).

TABLE 29 TO SUBPART G OF PART 63—SEAL RELATED FACTORS FOR EXTERNAL FLOATING ROOF VESSELS

| Seal type | Welded vessels | | Riveted vessels | |
|---|---|---|---|---|
| | $K_S$ | N | $K_S$ | N |
| Metallic shoe seal: | | | | |
| Primary seal only | 1.2 | 1.5 | 1.3 | 1.5 |
| With shoe-mounted secondary seal | 0.8 | 1.2 | 1.4 | 1.2 |
| With rim-mounted secondary seal | 0.2 | 1.0 | 0.2 | 1.6 |
| Liquid mounted resilient seal: | | | | |
| Primary seal only | 1.1 | 1.0 | [a] NA | NA |
| With weather shield | 0.8 | 0.9 | NA | NA |
| With rim-mounted secondary seal | 0.7 | 0.4 | NA | NA |
| Vapor mounted resilient seal: | | | | |
| Primary seal only | 1.2 | 2.3 | NA | NA |
| With weather shield | 0.9 | 2.2 | NA | NA |
| With rim-mounted secondary seal | 0.2 | 2.6 | NA | NA |

[a] NA=Not applicable.

TABLE 30 TO SUBPART G OF PART 63—ROOF FITTING LOSS FACTORS, $K_{Fa}$, $K_{Fb}$, AND M, [A] AND TYPICAL NUMBER OF FITTINGS, $N_T$

| Fitting type and construction details | Loss factors [b] | | | Typical number of fittings, $N_T$ |
|---|---|---|---|---|
| | $K_{Fa}$ (lb-mole/yr) | $K_{Fb}$ (lb-mole/[mi/hr]$^m$-yr) | m (dimensionless) | |
| Access hatch (24-in-diameter well) | | | | 1. |
| Bolted cover, gasketed | 0 | 0 | [c] 0 | |
| Unbolted cover, ungasketed | 2.7 | 7.1 | 1.0 | |
| Unbolted cover, gasketed | 2.9 | 0.41 | 1.0 | |
| Unslotted guide-pole well (8-in-diameter unslotted pole, 21-in-diameter well). | | | | 1. |
| Ungasketed sliding cover | 0 | 67 | [c] 0.98 | |
| Gasketed sliding cover | 0 | 3.0 | 1.4 | |
| Slotted guide-pole/sample well (8-in-diameter unslotted pole, 21-in-diameter well). | | | | ([d]). |
| Ungasketed sliding cover, without float | 0 | 310 | 1.2 | |
| Ungasketed sliding cover, with float | 0 | 29 | 2.0 | |
| Gasketed sliding cover, without float | 0 | 260 | 1.2 | |
| Gasketed sliding cover, with float | 0 | 8.5 | 1.4 | |
| Gauge-float well (20-inch diameter) | | | | 1. |
| Unbolted cover, ungasketed | 2.3 | 5.9 | [c] 1.0 | |
| Unbolted cover, gasketed | 2.4 | 0.34 | 1.0 | |
| Bolted cover, gasketed | 0 | 0 | 0 | |
| Gauge-hatch/sample well (8-inch diameter) | | | | 1. |
| Weighted mechanical actuation, gasketed. | 0.95 | 0.14 | [c] 1.0 | |
| Weighted mechanical actuation, ungasketed. | 0.91 | 2.4 | 1.0 | |
| Vacuum breaker (10-in-diameter well) | | | | $N_{F6}$ (Table 31). |
| Weighted mechanical actuation, gasketed. | 1.2 | 0.17 | [c] 1.0 | |

| Fitting type and construction details | Loss factors [b] | | | Typical number of fittings, $N_T$ |
|---|---|---|---|---|
| | $K_{Fa}$ (lb-mole/yr) | $K_{Fb}$ (lb-mole/[mi/hr]$^m$-yr) | m (dimensionless) | |
| Weighted mechanical actuation, ungasketed. | 1.2 | 3.0 | 1.0 | |
| Roof drain (3-in-diameter) | | | | $N_{F7}$ (Table 31). |
| Open | 0 | 7.0 | [e] 1.4 | $N_{F8}$ (Table 32 [f]). |
| 90 percent closed | 0.51 | 0.81 | 1.0 | |
| Roof leg (3-in-diameter) | | | | $N_{F8}$ (Table 32 [f]). |
| Adjustable, pontoon area | 1.5 | 0.20 | [c] 1.0 | |
| Adjustable, center area | 0.25 | 0.067 | [c] 1.0 | |
| Adjustable, double-deck roofs | 0.25 | 0.067 | 1.0 | |
| Fixed | 0 | 0 | 0 | |
| Roof leg (2½-in-diameter) | | | | $N_{F8}$ (Table 32 [f]). |
| Adjustable, pontoon area | 1.7 | 0 | 0 | |
| Adjustable, center area | 0.41 | 0 | 0 | |
| Adjustable, double-deck roofs | 0.41 | 0 | 0 | |
| Fixed | 0 | 0 | 0 | |
| Rim vent (6-in-diameter) | | | | 1 [g]. |
| Weighted mechanical actuation, gasketed. | 0.71 | 0.10 | [c] 1.0 | |
| Weighted mechanical actuation, ungasketed. | 0.68 | 1.8 | 1.0 | |

[a] The roof fitting loss factors, $K_{Fa}$, $K_{Fb}$, and m, may only be used for wind speeds from 2 to 15 miles per hour.
[b] Unit abbreviations are as follows: lb = pound; mi = miles; hr = hour; yr = year.
[c] If no specific information is available, this value can be assumed to represent the most common or typical roof fittings currently in use.
[d] A slotted guide-pole/sample well is an optional fitting and is not typically used.
[e] Roof drains that drain excess rainwater into the product are not used on pontoon floating roofs. They are, however, used on double-deck floating roofs and are typically left open.
[f] The most common roof leg diameter is 3 inches. The loss factors for 2½-inch diameter roof legs are provided for use if this smaller size roof is used on a particular floating roof.
[g] Rim vents are used only with mechanical-shoe primary seals.

## Table 31 to Subpart G of Part 63—Typical Number of Vacuum Breakers, $N_{F6}$ and Roof Drains, [A] $N_{F7}$

| Tank diameter D (feet) [b] | No. of vacuum breakers, $N_{F6}$ | | No. of roof drains, $N_{F7}$ double-deck roof [c] |
|---|---|---|---|
| | Pontoon roof | Double-deck roof | |
| 50 | 1 | 1 | 1 |
| 100 | 1 | 1 | 1 |
| 150 | 2 | 2 | 2 |
| 200 | 3 | 2 | 3 |
| 250 | 4 | 3 | 5 |
| 300 | 5 | 3 | 7 |
| 350 | 6 | 4 | [d] |
| 400 | 7 | 4 | [d] |

[a] This table should not supersede information based on actual tank data.
[b] If the actual diameter is between the diameters listed, the closest diameter listed should be used. If the actual diameter is midway between the diameters listed, the next larger diameter should be used.
[c] Roof drains that drain excess rainwater into the product are not used on pontoon floating roofs. They are, however, used on double-deck floating roofs, and are typically left open.
[d] For tanks more than 300 feet in diameter, actual tank data or the manufacturer's recommendations may be needed for the number of roof drains.

## Table 32 to Subpart G of Part 63—Typical Number of Roof Legs, [A] $N_{F8}$

| Tank diameter D (feet) [b] | Pontoon roof | | No. of legs on double-deck roof |
|---|---|---|---|
| | No. of pontoon legs | No. of center legs | |
| 30 | 4 | 2 | 6 |
| 40 | 4 | 4 | 7 |
| 50 | 6 | 6 | 8 |
| 60 | 9 | 7 | 10 |
| 70 | 13 | 9 | 13 |
| 80 | 15 | 10 | 16 |
| 90 | 16 | 12 | 20 |
| 100 | 17 | 16 | 25 |
| 110 | 18 | 20 | 29 |
| 120 | 19 | 24 | 34 |
| 130 | 20 | 28 | 40 |
| 140 | 21 | 33 | 46 |
| 150 | 23 | 38 | 52 |
| 160 | 26 | 42 | 58 |
| 170 | 27 | 49 | 66 |
| 180 | 28 | 56 | 74 |
| 190 | 29 | 62 | 82 |
| 200 | 30 | 69 | 90 |
| 210 | 31 | 77 | 98 |
| 220 | 32 | 83 | 107 |
| 230 | 33 | 92 | 115 |
| 240 | 34 | 101 | 127 |
| 250 | 34 | 109 | 138 |
| 260 | 36 | 118 | 149 |
| 270 | 36 | 128 | 162 |
| 280 | 37 | 138 | 173 |
| 290 | 38 | 148 | 186 |
| 300 | 38 | 156 | 200 |
| 310 | 39 | 168 | 213 |